

User's Guide



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DPG 10L LARGE DISPLAY PRESSURE GAUGE

M3367/0606

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- ✓ pH, Conductivity & Dissolved Oxygen Instruments

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• **Warranty/Disclaimer**

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

OMEGA is please to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no even shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

• **Return Requests/Inquiries**

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

Warranty Returns

For WARRANTY RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problem relative to the product.

Non-Warranty Repairs

For NON-WARRANTY REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contact OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problem relative to the product.

• Instructions

The model DPG10L Digital Pressure Gauge has several features not normally found as standard in Digital Pressure Gauges. These include the Analog Scale, Tare, and Peak Holds. The Analog Scale is a 40 segment display that appears around the edge of the liquid crystal display. This scale represents the pressure reading as a percentage of full scale, and each individual segment equals 2.5%. The Tare feature provides a method of zeroing out an existing offset such as the weight of the platform on a hydraulic scale. The Hold feature allows the user to select Hi or Lo. When the Hold is enabled the reading displayed is the highest or lowest pressure experienced in the system since Hold was enabled, and this information will continue to be updated at the rate of six times a second until Hold is disabled.

1.0 To Zero or "TARE OUT" an existing offset

- 1.1 Press and hold the "MODE" key until the reading starts flashing. Release "MODE" key.
- 1.2 Press "ENTR" key until the reading becomes 0000.
NOTE: Tare range is 100% of Full Scale.
- 1.3 To return to the Gross reading press and hold "ENTR", then with "ENTR" still depressed press "MODE" until the reading returns to the gross, then release both keys.

2.0 To select PEAK HI or PEAK LO hold functions

- 2.1 Press and hold the "MODE" key until the reading starts flashing. Release the "MODE" key, then press "MODE" key once more, the display will read "HOLD". Press "ENTR" key once, the display will read "NO H". Using "up" or "down" keys select "NO H" (no Hold), "H Lo" (Peak Low Hold), or "H Hi" (Peak High Hold). Press "ENTR" key to lock your selection.
NOTE: When the Hold function is enabled "PEAK" is displayed, this will be the same for "Hi" or "Lo" Hold. You must remember which you have engaged.
- 2.2 To reset after capturing a Hi Peak or Lo Peak, Press and hold "MODE" key until the reading starts flashing. Release the "MODE" key, then press "ENTR", hold momentarily then release.

- 2.3 To disengage Hold press and hold the “MODE” key until the reading starts flashing. Release the “MODE” key then press the “MODE” key once more, the display will read “HOLD”. Press the “ENTR” key, the display will read “NO H” Press the “ENTR” key once more and the display will return to reading the system pressure.

3.0 To Set Alarms

- 3.1 Press and hold the “MODE” key until the reading starts flashing, then Press the “MODE” key twice more. The display will read “AL 1”. Press the “ENTR” key to display the alarm setting. Pressing the “ENTR” key again will set the alarm and return the display to the normal mode. If the alarm setting is to be changed, the “up” and “down” keys can be used to increase or decrease the setting one count at a time, Pressing the “MODE” key and holding it down while Pressing “up” or “down” momentarily will change 10 counts for each key operation. If the “MODE” key and “up” or “down” are held down simultaneously, the setting will ‘FREE RUN’ until the key is released.

NOTE: While setting the alarm, only one segment of the analog scale is displayed and it corresponds to the % full scale of the alarm setting.

- 3.2 When the desired alarm setting is displayed, Press “ENTR” to set and return to normal mode.
- 3.3 To set alarm 2: Press and hold the “MODE” key until the reading starts flashing, then Press the “MODE” key three more times. The display will read “AL 2”. Press “ENTR” key to display the alarm setting. Pressing the “ENTR” key again will set the alarm and return the display to the normal mode. If the alarm setting is to be changed, the “up” and “down” keys can be used to increase or decrease the setting one count at a time, Pressing the “MODE” key and holding it down while Pressing “up” or “down” momentarily will change 10 counts for each key operation. If the “MODE” key and “up” or “down” are held down simultaneously, the setting will ‘FREE RUN’ until the key is released.

NOTE: While setting the alarm, only one segment of the analog scale is displayed and it corresponds to the % full scale of the alarm setting.

- 3.4 When the desired alarm setting is displayed, Press “ENTR” to set and return to normal mode.

- 3.5 The alarm set point indicator segment of the bar graph will “blink” when that set point is activated. The hookup of optional outputs is covered later in this manual

4.0 Zero Trimming

- 4.1 Should it be necessary to readjust the Zero setting, an adjustment has been provided. Prior to adjusting the zero, verify that you are displaying the “gross” zero reading by performing step 1.3. On the back of the case, in the upper left, there are two cover screws labeled “Z” and “S”. Remove the screw covering the “Z” and utilizing a jewelers screwdriver, turn the small screw to re-zero the unit. The ideal zero is indicated by a reading of 0000 with an intermittently flashing “-” sign.

NOTE: Do not readjust the “S” as this will invalidate the factory calibration.

5.0 Re-calibration

This procedure requires a known pressure source of at least $\pm 0.1\%$ accuracy in order to fully utilize the potential of the DPG10L (If not available, the gauge may be returned to OMEGA for re-certification)

- 5.1 With 0 psig applied (port vented) adjust zero per instructions of 4.0.
5.2 Apply full scale pressure to the pressure port and adjust the “S” until the display reads the correct pressure.
5.3 Re-check zero and re-adjust the zero if required.
5.4 Repeat steps 5.2 and 5.3 until no further adjustment is required.

6.0 Battery Replacement

- 6.1 To access the battery, the unit must be partially disassembled. Remove the thread ring surrounding the lens by turning counter clockwise. Carefully turn the unit face down with one hand prepared to “catch” the lens and display board as they fall from the housing. Do not allow the display board to fall more than an inch or two as there are wires connecting it to the main housing.
- 6.2 Disconnect the two wire connector that leads from the batteries to the electronic. Then remove the battery or batteries from the holder(s) and replace with the same type that was removed, taking care to observe the correct polarity. Re-connect the battery connector.

• DPG10L Output Options

Several output signals are available on the circular 6 pin connector located on the rear of the unit. Depending on the option selected the signals are present on pins as follows.

DPG10L Pin Out Table

	4-20 mA with Alarm	4-20 mA	0-5 VDC	0-2 VDC with Alarm	0-2 VDC	Ex Pwr	0-5 VDC with Alarm
A	+ Excitation	+ Excitation	+ Excitation	N/C	N/C	+ Pwr	+ Excitation
B	- Excitation	- Excitation	+ Output	+ Output	+ Output	- Pwr (Com)	+ Output
C	Dig Gnd	N/C	- Output	- Output	- Output	N/C	- Out/- Ex
D	Alarm 2	N/C	- Excitation	Alarm 2	N/C	N/C	Alarm 2
E	Alarm 1	N/C	N/C	Alarm 1	N/C	N/C	Alarm 1
F	Gnd	N/C	Gnd	Gnd	N/C	N/C	Dig Gnd

N/C indicates no connection.

1. 0-2 V Analog Output Signal Option

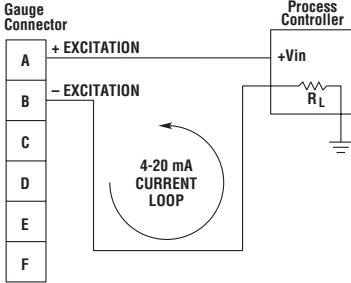
The analog output signal is available on pins B and C of the circular 6 pin connector located on the rear of the unit. The signal is short circuit protected and capable of driving low impedance external loads with fixed gain to a specified output level, with 10K Ohm and above loads. Frequency response is a function of the pressure range, generally 1 to 3 KHZ. Loading of the analog output will result in a reduction of the battery life expectancy due to the additional current through the external load.

2. Alarm(s) Option

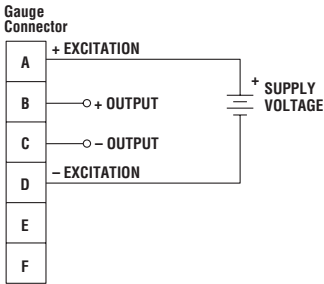
The two open drain alarm output signals are present on pin D (alarm 2) and pin E (alarm 1) of the output connector. The alarm trip-points are software selected by using the unit's front key-pad (see section 3.0 in the instructions section of this manual). When active, they are capable of sinking 500 mA at 60 VDC Max with 7.5 ohms typical ON resistance to the digital ground as if they were two independent SPST normally closed switches with one end connected to the digital ground and the other end presented as an output. The typical configuration will require an external power supply and a 1 to 10K Ohm pull up resistor connected between the positive terminal of the power source and each alarm output. Inductive load switching such as small solenoids or relays is also possible utilizing the alarm output as a "low side switch". The use of a diode or a capacitor across the load terminals is required to reduce "kick-backs".

• **Wiring**

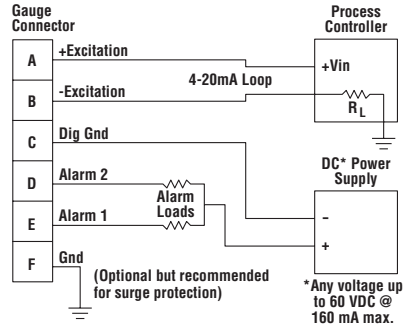
Typical 4-20 mA Circuit



Typical 0-5 VDC Circuit



Typical 4-20 mA Circuit with Open Collector Alarms

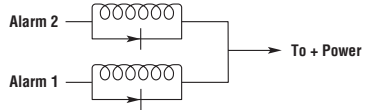


$R_L = 250 \text{ ohm}$ for 1-5 V output

$R_L = 500 \text{ ohm}$ for 2-10 V output

DO NOT EXCEED 750 OHMS WITH 24 VDC SUPPLY.

NOTE: Alarm loads may be relay coils as shown below. Connect 1 A 400 V diodes to protect from relay "kick".



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OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, patient-connected applications.

Again, thank you for your interest in OMEGA.
We welcome the opportunity to help you achieve your application goals.

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